

Y-slides to a desired Y-position so as to prepare for the placement on the printed circuit board of the components picked up in the first period of time, and

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- in a fourth period of time following the third period of time, moving the first series of placement heads to a desired X-Y position above the printed circuit board and, subsequently, placing the components simultaneously on the printed circuit board.
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REMARKS

This application has been carefully reviewed in light of the Office Action dated May 6, 2002. Claims 1-4 remain pending in this application. Claims 1 and 3-4 are now the independent claims. Favorable reconsideration is respectfully requested.

On the merits, the Office Action rejected Claims 1-4 under 35 U.S.C. § 101 because claims 1 and 2 are drawn to a component apparatus and Claims 3-4 are drawn to a method of placing components. Applicant respectfully believes that the amendments to Claims 3 and 4 render the rejection moot. Consequently, Applicant respectfully requests withdrawal of the § 101 rejection.

Further on the merits, the Office Action rejected Claims 1-4 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant

respectfully believes that the amendments to Claims 1 and 3-4 adequately respond to the § 112, second paragraph rejection. Further, these amendments were made for clarification purposes and are not intended to limit the scope of the claims in any way. Withdrawal of the § 112, second paragraph rejections is respectfully requested.

Further on the merits, the Office Action rejected Claims 1 and 3 under 35 U.S.C. § 102(e) as being anticipated by Sato et al. (U.S. Patent No. 5,839,187; hereinafter "Sato"). The Office Action also rejected Claims 2 and 4 under 35 U.S.C. § 103(a) as being unpatentable over Sato in view of Chiappe et al. (U.S. Patent No. 5,601,394; hereinafter "Chiappe"). Applicant respectfully submits that the pending claims are patentable for at least the following reasons.

Applicant's Claim 1 recites: "[a] component placement machine for placing components on a printed circuit board, comprising:

- a transport device for transporting printed circuit boards in an X-direction,
- on either side of the transport device, respectively, a first and a second feeder area, in each of which there is at least one feeder with components,
- a Y-slide, which is drivable in the X-direction, and
- at least one placement head on said Y-slide, which placement head is drivable in a Y-direction,

characterized in that the Y-slide is provided with at least two placement heads which can be independently driven in a Y-direction."

Applicant respectfully notes that Sato constitutes an improper reference for a § 102(e) rejection. This is because Sato issued prior to Applicant's filing date. The subsequent arguments treat the rejection as a § 102(b) rejection for the purposes of responding to the Sato reference.

Sato fails to recite or suggest multiple placement heads that can be independently driven. Rather, Sato recites a single placement head 70 on Y-slide 28 which fails to anticipate Applicant's Claim 1. Further, Sato increases productivity by moving chips for subsequent placement to the same pickup station as head 70 picked up a prior chip. This fails to accomplish Applicant's objective of simultaneously picking up a component from one of the feeders with one head and making preparations for the placement of a component with another. Consequently, Claim 1 is believed patentable over Sato for at least these reasons.

Chiappe fails to compensate for what Sato lacks because it only recites single heads on Y-Slide conveyors (38a-38d). Consequently, the combination of Sato and Chiappe fails to render Applicant's Claim 1 obvious taken separately or in any proper combination.

Independent Claims 3 and 4 recite methods of placing

components substantially corresponding to the component placement machine of Claim 1 and are believed patentable for at least the same reasons.

Claim 2 depends from independent Claim 1 discussed above and is believed patentable for at least the same reasons. In addition, Applicant respectfully believes Claim 2 to be independently patentable and request separate consideration of each claim.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned agent may be reached by telephone at the number given below.

Respectfully submitted,

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APPENDIX A

MARKED-UP CLAIMS

1. (Amended) A component placement machine for placing components on a printed circuit board, comprising:

- a transport device for transporting printed circuit boards in an X-direction,
- on either side of the transport device, respectively, a first and a second feeder area, in each of which there is at least one feeder with components,
- a Y-slide, which is drivable in the X-direction, and
- ~~a~~ at least one placement head on said Y-slide, which placement head is drivable in a Y-direction,

characterized in that the Y-slide is provided with at least two placement heads which can be independently driven in a Y-direction.

3. (Amended) A method of placing components on a printed circuit board by means of a component placement machine ~~as claimed in claim 1, characterized in that~~ comprising:

- in a first period of time, moving a first placement head ~~moves~~ to a desired X-Y position above a first feeder and, subsequently, ~~picks~~ picking up a component from the first feeder, moving a second placement head ~~moves~~ along ~~at the~~ Y-slide to a desired Y-position so as to prepare for the placement of a previously picked-up component on the printed circuit board,

- desired Y-position so as to prepare for the placement on the printed circuit board of previously picked-up components,
- in a second period of time following the first period of time, moving the second series of placement heads ~~moves~~ to a desired X-Y position above the printed circuit board and, subsequently, ~~places~~ placing the components simultaneously on the printed circuit board,
 - in a third period of time following the second period of time, moving the second series of placement heads ~~moves~~ to a desired X-Y position above a second feeder and, subsequently, simultaneously ~~picks~~ picking up components from the second feeder, moving the first series of placement heads moves along the one of a multitude of Y-slide-slides to a desired Y-position so as to prepare for the placement on the printed circuit board of the components picked up in the first period of time, and
 - in a fourth period of time following the third period of time, moving the first series of placement heads ~~moves~~ to a desired X-Y position above the printed circuit board and, subsequently, ~~places~~ placing the components simultaneously on the printed circuit board.

- in a second period of time following the first period of time, moving the second placement head ~~moves~~ to a desired X-Y position above the printed circuit board and, subsequently, ~~places~~ placing the component on the printed circuit board,
- in a third period of time following the second period of time, moving the second placement head ~~moves~~ to a desired X-Y position above a second feeder and, subsequently, ~~picks~~ picking up a component from the second feeder, moving the first placement head ~~moves~~ along the Y-slide to a desired Y-position so as to prepare for the placement on the printed circuit board of the component picked up in the first period of time, and
- in a fourth period of time following the third period of time, moving the first placement head ~~moves~~ to a desired X-Y position above the printed circuit board and, subsequently, ~~places~~ placing the component on the printed circuit board.

4. (Amended) A method of placing components on a printed circuit board by means of a component placement machine ~~as claimed in claim 2, characterized in that comprising:~~

- in a first period of time, moving a first series of placement heads ~~moves~~ to a desired X-Y position above a first feeder and, subsequently, simultaneously ~~picks~~ picking up components from the first feeder, moving a second series of placement heads ~~moves~~ along the one of a multitude of Y-slide slides to a